



Blue Argus
(*Gynonia orithya*
albicincta) male (top) and
female (beneath) on
(*Pseuderanthemum*
variabile)

METAMORPHOSIS

AUSTRALIA

Magazine of the Butterfly & Other Invertebrates Club

ISSUE NO: 81

DATE: JUNE 2016
Price \$6.00

ISSN: 1839-9819
<http://www.boic.org.au>

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PLANNING AND ORGANIZATION MEETINGS

A quarterly meeting is scheduled in order to plan club activities and the magazine.
See BOIC Programme.

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Membership fees are \$30 for individuals, schools and organizations.

AIMS OF THE ORGANIZATION

- To establish a network of people growing butterfly host plants;
- To hold information meetings about invertebrates;
- To organize excursions around the theme of invertebrates e.g. butterflies, native bees, ants, dragonflies, beetles, freshwater habitats, and others;
- To promote the conservation of the invertebrate habitat;
- To promote the keeping of invertebrates as alternative pets;
- To promote research into invertebrates;
- To encourage the construction of invertebrate friendly habitats in urban areas.

MAGAZINE DEADLINES

If you wish to submit an item for publication the following deadlines apply:

March issue – February 1st June issue – May 1st

September issue – August 1st December issue – November 1st

All articles should be submitted directly to the Editor daphne.bowden1@bigpond.com

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COVER PAINTING

Blue Argus (*Junonia orithya albicincta*) - Painting by Lois Hughes



FROM THE PRESIDENT

The AGM has come and gone. As well as the familiar faces on the executive, Paul Klicin is now our new and enthusiastic Excursions Co-ordinator. We are still short of a Secretary so if you would like to contribute to the club in this way please let me know.

The launch of the Mistletoe book was well attended and quite successful not only in getting the word out but also in selling the book. Ross McKinnon gave an excellent speech. I'd like to thank Gordon Guymer for making the Queensland Herbarium available for the launch.

Now that the mistletoe book is out we can start thinking about an excursion about mistletoes and perhaps a project to build on the interest being generated.

I would like to thank those who have contributed articles for the magazine. Keep them coming.

Excitement is growing as the new butterfly house at Bribie Island gets closer to completion. It will be wonderful to be able to go somewhere and be guaranteed to see local butterflies.

Our last meeting was held at the Cubberla-Witton Catchments Centre. Thanks to Jutta Godwin for making it available. An earlier meeting was held at the Boondall Wetlands and thanks to Russel Denton for organizing that. I would like to see more shared activities with catchment and bushcare groups.

Happy Reading *Frank Jordan*

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Ed note: Did you notice the stamps on the envelope? Australia Post has issued a new butterfly series.



Blue Argus (*Junonia orithya albicincta*) (Lepidoptera: Nymphalidae) – Frank Jordan

My first memory of the Blue Argus was of its caterpillar, near Townsville in 1988. The distinctive branched spines gave it away as it fed on a small insignificant Pink Tongue plant. While the butterfly is common in the north it was only an occasional visitor to Brisbane. Indeed only once in twenty years did one find its way to my inner city West End garden to lay any eggs. It ignored the Pink Tongue plants I had been growing for nearly twenty years and instead opted for the Love Flower.



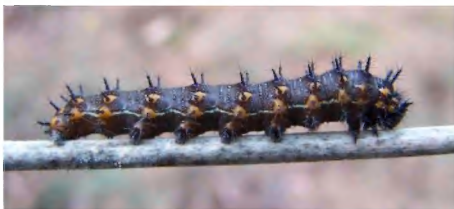
Blue Argus (*Junonia orithya albicincta*) female

From a distance, the flying butterfly looks mostly like a black shadow with occasional flashes of bright blue as the light hits the wings at the right angle. When it lands and closes its wings it is hard to distinguish it from the leaf litter. However when the sun is shining it will keep its wings open and the beautiful metallic blue grabs your attention. Small reddish rings and white margins and bands make for an interesting pattern. If you manage to get very close you will also get to see what looks like a light sprinkling of gold dust on the wings.

Unlike a lot of other butterflies, this is one that prefers open Eucalypt forest and this makes it a good candidate for encouraging in suburban gardens which also tend to be open and sunny. As our climate becomes warmer we can expect to find more of them in Brisbane.

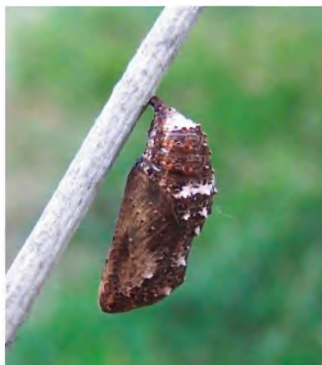
This probably explains the exciting observation of at least half a dozen of these butterflies flying in the bushland at Pooh Corner (Wacol) for the last couple of months. I did not see any caterpillars there but I did see many different species of its known host plants.





Blue Argus caterpillar ↑

Blue Argus pupa →



This is one of the few places in Brisbane where Karamat (*Hygroplitis angustifolia*) can be found. It likes it wet and was growing near some ephemeral ponds. A few Love Flowers (*Pseuderanthemum variabile*) manage to hang on in some of the shady places. Occasional patches of Pink Tongue (*Rostellularia obtusa*) seemed to have been grazed by the local iconic kangaroos but were surviving. The Blue Trumpet (*Brunoniella australis*) puts in an appearance in unexpected places. The non-native Snapdragon (*Antirrhinum* sp.) is also listed as a host plant and while wild ones used to grow in the area near the railway line fifty years ago I couldn't see any this time.



Love Flower (*Pseuderanthemum variabile*)



Pink Tongue (*Rostellularia obtusa*)

The Blue Argus is a beautiful butterfly and while it is still rare in Brisbane I would encourage everyone to grow a few Love Flowers just in case one happens to fly through your garden.

Photos Frank Jordan

PRESIDENT'S REPORT TO THE 2016 AGM

Firstly I would like to thank Marie-Louise Johnson for the work she did as president for most of the last year before she had to unexpectedly relinquish the position. I would also like to thank our Secretary, Jill Fechner, for her work for the club. Her



other commitments mean that she will be unable to continue as our secretary. John Moss, our vice-president of twenty years standing, is also relinquishing his position to a younger member. John will have his hands full promoting the new mistletoe book.

The magazine continues to be the main focus of the club and Daphne Bowden continues to do a magnificent job in ensuring it is interesting and of a high quality. Lois Hughes continues to provide a high standard of artwork for the magazine. The members who contribute articles and share their knowledge are essential to the continuing success of our publication.

Rob MacSloy has been, and continues to be, an excellent treasurer.

Alisha Steward has done a great job in creating a Facebook page for the club. It allows club members to communicate directly with each other about their passions and share them with others. It has proven to be quite helpful for new members to have any invertebrates they have photographed to be identified by more experienced members.

Peter Hendry and his expertise with moths is often called upon, as is the expertise of many others.

The highlight of the past year has been the completion of the mistletoe book. It will be a valuable resource for nature lovers and those who attend the AGM will be among the first to see it.

Frank Jordan

ITEMS OF INTEREST

Edited address by Ross McKinnon at the mistletoe book launch April 16th 2016

Thank you so much for your warm welcome. It is wonderful to be back here at a place I called home for 42 years. We acknowledge Dr Gordon Guymner, the host today of our wonderful celebration and is, of course, the director of the Queensland Herbarium who had a significant role to play in the publication of this book. But as well as that, I am pleased to see a number of children in the audience because it was at about their age that I heard about mistletoes.

All of our family has been in Australia since 1853. They were all on the land and it was almost by osmosis I suppose, that I learned about the world of mistletoes and just found them absolutely amazing. Added to that, of course, was the fact that many of our relatives lived in Scotland and every Christmas we would receive a card with snow and perhaps even a sprig of mistletoe. We used to stick the mistletoe over the door. We learned that mistletoes must be fun!



Of course, it is more than just fun isn't it? This book details all of that. In fact, Ross Kendall in the introduction says that this book has been 30 years in its genesis. He has dreamed about producing this book for 30 years and today Ross, is the day that it comes true. It is an important day in yours and your family's life I am sure and also in your grandson's life. I hear that he had a big role to play. But there is a whole page of acknowledgements. So this is the collusion of, if you like, so many of the people in this room and outside of this room as well.

So it is a scholarly work. It is a scientific work and yet it is for the layperson. I was just saying to a couple out in the foyer that my wife and I took a draft of it on a road trip around Victoria last year. As I was driving, Susie was doing the looking up. I would say, "There's a mistletoe!" so she would madly go to the book and I just thought for a layperson it is so, so easy to read. And that's the genesis of this whole work and I am sure that you want it to be read by a large number of people and I am sure it will be. I am sure it will be in everybody's glove box when they are going on a road trip particularly now in the cooler months because we want to know what we are looking at. It's an easy guide with, I might also say, an excellent introduction. Yes it has a scientific introduction but more than that, I believe that it is equally applicable to the layperson and very interesting as well.

It then goes on to the systematic identification of mistletoes and that is very important. There are 46 mistletoes mentioned in this book in 51 taxa out of 93 mistletoes in the whole of Australia. I quote, "Globally, there are over 4500 known species of parasitic flowering plants in two groups. 90% are hemiparasites that obtain water and dissolved nutrients from either the stems or roots of other plants and use photosynthesis to produce carbohydrates, while the remaining 10% are holoparasites that obtain all of their requirements from their hosts." So they are an amazing group of plants that, I think, can capture kids' imagination.

I love the line drawing as well and they have been done by a number of people. They just brought home to both my wife and I on our road trip just how easy it is to identify the plants.

I open the book at just a random page and here is the Bottlebrush Mistletoe. On one page you have the description. Once again, this description is wholly scientific and, once again, it is able to be read with interest by the layperson. There is the next heading which is "Habitat and Host Plants" followed by the heading "Butterflies and Moths" and there are 4 species that need this Bottlebrush Mistletoe for their very survival. In "Notes", I see that John Moss went with Peter Hendry on a trip in 2005 and found out that the Satin Azure butterfly was way out of its normal zone because of this particular mistletoe along the Perry and Burnett rivers. I also read "Major flooding in the Perry and Burnett rivers in January 2013 appears to have stripped most of the mistletoes from their hosts."



I thought, “Well how current is that?” Yet this book is not just for now. It is not on the best sellers list for a month and then disappears entirely. This book will be just as relevant in 30 years when all the children up the back are adults. So it has a long life span.

It is also endorsed by two other people of whom I have the highest regard. On the back cover Dr Gordon Guymor of the Queensland Herbarium gives it a ringing endorsement and a number of his staff was involved in looking at the book. Glenn Leiper, our dear friend, the Conservation Officer of Native Plants Queensland, was also involved. I don’t think you can get a higher endorsement of John and Ross’s work from two better-qualified people.

I also recall that a number of years ago, when I was working, John came into my office and he rounded on me and he said, “Why is the Brisbane City Council cutting all the mistletoes out of all the trees on Council land?” I said, “Hey, I am only one of 9000 employees! It is not up to me.” He said, “But you can stop it.” and told me the Butterfly & Other Invertebrates Club were having a petition and would like me to sign it. I did and we actually stopped the removal of mistletoes from trees on Brisbane City Council areas. And I believe that sent a wave across Australia that we initially wanted them to stop it until it is realised that mistletoes were not causing the death of all those trees as had been widely thought. I said to John that I saw a danger to all the eucalypts on the North East Tablelands of New South Wales. He said, “No. It is a range of pathogens and the mistletoes are taking advantage of it.”

Isn’t it amazing – this is what got me as a kid – that a mistletoe can mimic the host plant on which it lives. Many are host specific and I thought that they may possibly take the growth hormones of the host plant and that’s how they attain the same shape and colour as the host plant. I find the whole subject absolutely fascinating. So this book is not just a scientific work but will have a very, very wide appeal.

Did you know there are 220 days to Christmas? What I am suggesting is that each of you buys 5 copies of the book – 1 for yourself, 1 for a close member of your family and 3 for your friends who are about to go travelling. Now if their birthday isn’t in the next three months, then for heaven’s sake, give it to them so they can take it, like we did, on a trip out west or wherever they are going and they will find it absolutely invaluable.

What is here is the complete guide.

I am so proud and pleased to launch “The Mistletoes of Subtropical Queensland, New South Wales and Victoria.” and wish both the authors and all the collaborators every success.

Thank you.





My name is Angela and this is the story of a wonderful project on Bribie Island. Going on three years ago, I visited a property close to my home and met Ray Archer, who is affectionately now known on the island as 'The Butterfly Man'. To my absolute pleasure I discovered a wonderful, peaceful little sanctuary full of plants, flowers, butterflies and caterpillars. Following some major disruptions and tragedy in my personal life – coinciding with the disruption in our world - this was like medicine for my soul. Now three years later it is an absolute pleasure to be a part of our strongly followed group called 'The Bribie Butterfly Volunteers'. We are now an incorporated body and are about to expand and build an amazing, new Butterfly House on Bribie Island.



My children, Kira and Riley, enjoying the creatures in the butterfly house.



Ray and Delphine Archer, the founders of the Bribie Island Butterfly House project and great friends of mine.

Ray and his wife, Delphine, recently retired from a hectic business life. Being the busy and extremely energetic retirees they are - they now have time to seek their passions in life and continue giving back to society. Delphine is heavily involved in many charity projects in Australia and around the world, helping the poorest of the poor live happier and healthier lives. Ray has many projects on the go, however he is now living one of his greatest passions – breeding butterflies.





Ray collecting the eggs of the 'Orchard Swallowtail' while she is still busy laying. We collected over 200 eggs in a couple of days.

We currently have a little butterfly house at a residential property where we grow the food plants in a hydroponic system and nursery. We have a small breeding laboratory for the caterpillars and a lovely little butterfly house at the back where the butterflies live their happy lives and continue their cycle. We regularly collect the eggs, which we hatch in our laboratory. The community support has been amazing, so the council has kindly offered

some property to build a bigger and better butterfly house. This will give us space for many more volunteers.



A busy day for one of our volunteers, Reggie, attaching the 'Common Eggfly' chrysalises to toothpicks, ready to hang and wait for the butterflies to emerge. They are then released into the butterfly house.

The new butterfly house will be open to the public and will be run completely by volunteers with all profits from entry fees, going to charity. We will exist to provide visitors with a quality education, enjoyment and a place of peace. Our current and future projects provide ALL people, young and old, a place to meet, bond together and to provide a sense of purpose and community. We welcome and cater for people from all backgrounds and abilities and many lasting friendships have already been made.

Our current project has been a very interesting, successful and sometimes unsuccessful learning curve for Ray and all of our passionate volunteers. As most of the readers will know, breeding butterflies can be a very complicated procedure! We have learnt very valuable lessons and have become familiar with various disease, pest

and predator problems. This is often heartbreaking, yet these experiences have greatly developed our knowledge and procedures for minimizing the effects of these nasties.

For example:





A fine specimen of our 'Ulysses' butterfly. We often had up to 100 flying in the butterfly house at once. We hope to have more flying soon.

When we first bred the exquisite, yet fragile, Ulysses we had months of great success with over a hundred beautiful blue butterflies flying in our house, and lots of healthy caterpillars cycling through. We temperature controlled the breeding lab, yet our new problem seemed to be viral or bacterial. We have since sanitized the areas and now let the fresh air flow through. We have since been getting the caterpillars through to their last instar, yet they have failed to go to chrysalis. We are giving them a break for now, after learning that a lot of captive breeders are having trouble with their stock. The breeding laboratory

in the new butterfly house will have a huge amount of natural air flow.



Ulysses happily feeding on our Pentas flowers.



'Orange Lacewing' feeding. We lost over 150 of these beauties in one week.

Another incident which comes to mind is associated with the larger predators. Unknown to us, some local cats had scratched two holes in the cloth of the butterfly house. The cats came in at night and killed all of our king quails and allowed rats, toads and geckos into the house. We lost over 150 butterflies in one week before we discovered the well-hidden holes. Although disheartening they are blessings in disguise, as we can now prevent this from occurring in the new butterfly house.



With the vital support of various hobby breeders, butterfly houses in Australia and overseas and of course The Butterfly and Other Invertebrate Club members, especially Ross Kendall, we are streamlining our procedures. We have standardised our potting mix to a specific formula to prevent outside pests and disease. We have better developed our skills of recognizing, preventing and treating various pests, disease and predators. This incorporates strict sterilization, quarantine and cleaning procedures. Teaching our volunteers how to clean and feed the caterpillars and their enclosures is pivotal to our success.



Some of our happy volunteers busy at work.



Our butterflies promoting some of the positive affirmations which will be displayed throughout the butterfly house.

Throughout the last few years we have given away thousands of butterfly attracting plants for locals to plant in their gardens to attract butterflies and promote the native butterfly population. We have many devoted 'Foster Carers' caring and growing our plants in pots at home for use as nectar and food plants in the new butterfly house. Ray and many of our volunteers have clocked up hundreds of kilometres letterboxing to create awareness and our local newspapers have been extremely supportive in spreading the word. We have many



influential community members and businesses on board helping, as our Ambassadors for the project, including local schools and kindergartens.

The beginning stages for construction of the new butterfly house have begun and all of our volunteers and community are very excited! This will be a very special and unique attraction and community project. Ray and Delphine have travelled extensively and visited many butterfly houses in Australia and worldwide. During their visits they have taken many interesting photos thinking someone may want to use them one day.....to their surprise it is themselves putting a magical butterfly house together – here in South East Queensland! We know this will provide substantial benefits to our children, schools, elderly, businesses, services and every person to enjoy a place of peacefulness and therapy amidst the stresses of life.



One of our 'Chocolate Argus' or Chocolate Soldiers, guarding our butterfly house.

Bribie Island Butterfly House will be completely wheelchair accessible. Unlike most butterfly houses, which have a rainforest theme, with mostly artificial nectar feeding areas, our house will be a little different, with hundreds of flowering plants “like a colourful meadow”, Ray says. We have been working with various gardeners and held a workshop presented by Sunshine Coast gardening expert - Paul Plant. Ray and our enthusiastic group of volunteers learnt valuable tips for growing and pruning nectar plants to promote maximum flowering.

“This butterfly house will have a real WOW factor with lots of surprises”, says Ray with a child-like glint in his eyes.



Our designer's impression of what the new Butterfly House will look like. Notice the breeding laboratory at the entrance and the butterfly house towards the rear.

Our Bribie Community is catching the vision. We have many people putting their hands up and we welcome you all to please join our group. Our local tradies, builders,



electricians, plumbers, fencing, designers and handymen are offering their valuable skills and supplying various materials via donation. The Bribie Community Art Centre and all of their associated groups have been unleashing their creativity, making various features for the butterfly house. The heart of our project is all of our treasured volunteers, including our home gardeners and dedicated daily helpers and team leaders.



The 'Circle of Friends' creation, made by our local potter – Colleen Finn. This will be proudly displayed as a focal point in the new Bribie Island Butterfly House. It represents the importance of community and friendship which is at the heart of our project.

If you would like to find out more information about this project please visit our developing website

www.bribieislandbutterflyhouse.blogspot.com.au

and our Facebook page Bribie Butterfly volunteers. You are welcome to check out our current project at Banksia Beach, however due to being located in a residential area, we can't have large groups visiting yet. Call Ray on 0409 491 419 for details. We have many ongoing tasks which require more and more volunteers so please let us know if you, or someone you know, would kindly donate your time or skills. We require a reasonable outlay for building the new butterfly house and have had many generous monetary donations, yet we welcome more because we aim to open debt free, so we can start passing on all profits to charity. All sponsors and volunteers will be listed on the website Honour Roll with significant sponsors prominently displayed at the Butterfly House.

Thank you BOIC members and readers.

Photos and Story supplied by Angela Blinco. Bribie Butterfly Volunteer.

Lipotriches – Family *HALICTIDAE* – Subfamily *Nomiinae* – Erica Siegel

The Family *Halictidae* are short-tongued bees and have dagger shaped tongues according to Dr Ken Walker (Bowerbird Bugle March 2016). *Lipotriches* used to be known as *Nomia* bees but in 2000 most were renamed *Lipotriches*.

According to the records on the Atlas of Living Australia website various species of *Lipotriches* bees occur in all states of Australia.



They measure about 10 millimetres and can be found in woodlands, forests, deserts and urban areas. Female *Lipotriches* bees carry pollen on scopal hairs on their hind legs, the tibia being the primary scopa and the femur the secondary scopa. Overseas studies show that some species of male *Lipotriches* have enlarged hind legs that may be used during courtship.

Most *Lipotriches* are ground dwelling bees and nest in burrows in the ground. Each tunnel measures about 8 millimetres in width and widens a few centimetres below the surface allowing the guard bee to retreat, thus allowing access to the entering bee. *Lipotriches* guard the nest entrance by blocking it with their faces during the day and the tail at night. A main entrance can be used by up to three females but each constructs her own side tunnel. The end of the tunnel contains a room where they construct vertical brood cells. Female *Lipotriches* collect pollen and nectar and deposit it in each cell as food for the developing larva before laying an egg. Some newly mated females spend the winter in semi hibernation in their nest.

At night large numbers of males cluster together on bare branches of trees, grass stems or other dry vegetation. Those arriving first attach themselves by their mandibles to the vegetation and later arrivals cling to the bodies of the first ones. Tarlton Rayment (*A Cluster of Bees*, 1935) wrote that some clusters may contain thousands of male bees.

References:

Batley, Dr. Michael, Australia Museum

Dollin, Dr. Anne, Australian Native Bee Research Centre www.aussiebee.com.au

Walker, Dr. Ken, Victoria Museum (*Bowerbird Bugle* March 2016)



Lipotriches (Austronimia) ferricauda



Lipotriches (Austronimia) australica





Lipotriches (Austronimia) flavoviridis



Lipotriches males roosting

Photos Erica Siegel

Ladybirds – Bernie Franzmann

There are some insects that almost everyone detests, e.g., bed bugs and lice. But equally, there are some almost everyone likes, e.g., butterflies and of course ladybirds. Many of us would remember reading about ladybirds in one of our first story books. Ladybirds are considered a sign of good luck in many cultures, and killing one is believed to bring misfortune.

Ladybirds are beetles in the family Coccinellidae. Like all beetles they undergo metamorphosis. They mate, lay eggs, larvae hatch, moult four times as they grow, pupate and emerge as adult ladybirds.

The great majority of ladybirds are “good” with the larvae and adults eating pests such as aphids, scales, mealy bugs, whiteflies and mites. Some are “bad” attacking potatoes and pumpkins.

Most commonly-seen adult ladybirds are about the same size of 4-7mm, but some are very small, being only about 1mm. in length.



Ladybird larva – Photo Jenny Thynne

Everyone knows what adult ladybirds look like but most don’t know what the larvae look like. They are hard to describe. Someone said that they look like tiny alligators. Check out the photo. The larvae of most common ladybirds grow to about 10mm.



A typical life cycle: Eggs about 1 week; larvae about 1.5 weeks; pupae about 1 week; adults live about 1-2 months.

Ladybirds are very voracious. A typical, aphid-eating larva eats 500-1000 aphids during development to the pupa, destroying about 100/day when fully grown. Adults eat about 200/day and 5000-10000 during their life. Most of the predatory species have preferred food but will eat almost any soft-bodied prey if they are hungry enough.

Because Mother Nature can be cruel, even beautiful ladybirds have enemies. They are often attacked by a few species of small wasps that parasitize larvae.

A very interesting parasite is the wasp, *Dinocampus coccinellae*. The wasp stings (lays an egg) into the adult ladybird and the wasp larva eats away at the insides of the ladybird. When the larva is fully developed, it paralyzes the ladybird and then it emerges and spins its cocoon below the ladybird. The ladybird is still alive (about 20% completely recover) and it sits above the cocoon and provides it with some protection. Some writers have described it as a “zombie” guarding the wasp cocoon. Why would the ladybird guard its enemy? Well, apparently, the wasp injects a virus into the ladybird which attacks its brain and so modifies its behavior. This parasite was featured in the November 2014 edition of National Geographic.

A few species of ladybirds from Australia have been introduced into other countries as bio-control agents. The most famous was the introduction of *Rodolia cardinalis* to California in 1888, to control cottony cushion scale, which was devastating the citrus trees. They cleaned up the scale and saved the citrus industry. Imagine how California may have developed differently but for this little Australian ladybird.

Let's talk about the most common ladybirds you might see in your backyard, on your veges and fruit trees or in your front yard, on your flowers and shrubs or on weeds in the front and back.



No. 1 The Transverse Ladybird, *Coccinella transversalis*

This is probably the one most commonly seen. It always looks exactly the same as in the image. It is primarily an aphid predator.



No. 2 The Common Spotted Ladybird, *Harmonia conformis*

This one has 20-23 spots. It feeds on aphids but also seems to do well on Psyllids.

No. 3 The Variable Ladybird, *Coelophora inaequalis*

As the name suggests, the adults exhibit extremely variable forms, with various patterns of stripes and spots. It was given its scientific name in 1775 by the Danish zoologist, J.C. Fabricius, but due to its variable patterns has been given, in error, six other scientific names. The variation in these patterns is under genetic control. The one shown is the most common form. It is mainly an aphid feeder.

No. 4 The Striped Ladybird, *Micrapsis frenata*

This one is very common in Spring, feeding on pollen of ornamental, weed and grass flowers. Large numbers are often seen on flowers at Toowoomba during the Carnival of Flowers in September. It can do quite well on a pollen diet but also eats aphids.



No. 5 The Steel Blue Ladybird, *Halmus chalybeus*

This is a very effective predator of various scale insects. It is often seen feeding on pest scales on backyard citrus. It can protect itself from ants by withdrawing its legs under the body and pressing closely to the leaf.

No. 6 The Fungus-eating Ladybird, *Illeis galbula*

This one is somewhat unusual, as it feeds on fungi. It is commonly seen feeding on powdery mildew on pumpkin and zucchini leaves.

No. 7 The White-collared Ladybird, *Hippodamia variegata*

This one was only discovered in Australia in 2000. It is the only one in this list which is not indigenous. It is primarily an aphid feeder. It was discussed in the December 2015 issue of Metamorphosis.

No. 8 The Mealybug Ladybird, *Cryptolaemus montrouzieri*

As the name suggests, this species is an important predator of mealybugs. The larvae are covered in tufts of white wax which makes them look somewhat like their prey.

We sent this species to Hawaii in 1893, where it did a good job for them in controlling a serious mealybug pest of pineapples. They returned the favour by sending us the cane toad in 1935. Now is that a fair exchange?





9



10

No. 9 The Yellow-shouldered Ladybird, *Apolinus lividigaster*
This one eats only aphids and is one of the few that can feed on the yellow aphids (*Aphis nerii*), that are found on oleander and milkweed, without being poisoned.

No. 10 28-spot and 26-spot Ladybird, *Epilachna vigintioctopunctata* and *E. vigintisexspunctata*

These ladybirds are plant feeders. The adults and larvae attack potatoes and a range of Cucurbits such as pumpkins and cucumbers. Adults feed on the top surface of the leaf and the spikey larvae feed on the bottom.

I am sometimes asked how to tell if you have pest ladybirds or good ones. My reply is that if they have more than 25 spots then they are pests.

Harmonia axyridis Harlequin ladybird or Multicoloured Asian ladybird

We haven't got this one yet, but it has been intercepted in Quarantine.

Is it a good or bad one? It is a very voracious aphid-feeder and apparently provides significant control of aphids in many crop situations, in a number of countries. But because of some of its attributes, it can be a threat to indigenous ladybirds and biodiversity. The general opinion among experts is that is "bad". Let's hope we don't see any of these in our yards.

Images, except where already credited, Adam Slipinski. We thank Adam for supplying these.

Life history notes on the Saltbush Blue, *Theclinesithes serpentata* *serpentata* (Herrich-Schaffer, 1869) Lepidoptera: Lycaenidae - Wesley Jenkinson



The Saltbush Blue previously known as the Chequered Blue is known from much of the eastern districts from central coastal Queensland including the inland areas southward into northern Tasmania and sporadically across all the other Australian states. This species is locally common where the host plants occur including the drier inland regions.

The species is encountered in a wide variety of open habitats where saltbushes are established. Adults



occasionally visit my garden in Beaudesert in south-east Queensland.

This species utilises a large range of host plants within the *Chenopodiaceae* and *Sapindaceae* families which are listed by several authors in Braby 2000.

The adults are occasionally attended by few small black ants (Grund, 1996a in Braby 2000).

The adults fly quickly close to the ground amongst low growing herbs and the host plants frequently basking in the sun with their wings opened revealing the upper-side colours. During hot conditions they often settle with the head slightly orientated downwards with the wings closed alternating the hind wings slightly up and down. The males also defend small territories around the saltbushes chasing rival males and also hilltop during sunny conditions. Both sexes feed from a variety of small native and introduced flowers including *Lavender* spp..

The adults can be very easily confused with the Samphire Blue (*T. sulpitius*), however *T. serpentata* generally has more extensive blue scaling on the upperside, white suffused markings on the underside of the hindwing and the subternal spot is reduced in comparison. The two species often differ in habit requirements with the first species being restricted to coastal estuarine environments.

The sexes can be difficult to separate. In comparison to the males, the females have the forewing slightly more rounded and the white underside markings more intense. The abdomen is also slightly shorter and wider.

Wingspans for the pictured adult specimens are: males 19mm and females 20mm.



Theclinessthes serpentata serpentata (Saltbush Blue)

Images left to right: male, female, male underside, female underside

In October 2007 a female was observed ovipositing near Leyburn in south-eastern Queensland. She slowly fluttered around the host plant and settled, then walked a short distance and curled the abdomen onto the host plant and laid a single egg. This egg was kept for life history studies. Subsequently the larva was successfully raised on an unidentified *Atriplex* species growing as a weed near my residence in Beaudesert.



This very tiny egg approximately 0.5 mm wide x 0.3mm high was pale green, mandarin shaped with a pattern of small pits.

Freshly laid egg



The small larva consumed the eggshell soon after emergence and sheltered below a host plant leaf. The early larval instar consumed small sections of the leaf centre tissue leaving the outer epidermis to dry. The larger larva chewed sections out of the leaf. It was observed feeding during daylight hours and they have also been recorded feeding during the night.



2nd instar larva

3rd instar larva

4th instar larva



5th instar larva



Pupa

In captivity the pupa, measuring 7mm in length, was located below a stem of the host plant. It was attached with silk by the cremaster and a central girdle.

The total time from egg to adult was about one month, with egg duration of 6 days, larval duration 18 days and pupal duration of 5 days.

Within the new boundary of the Scenic Rim Regional Shire south of Brisbane, I have records of adults from most months of the year, being more numerous during the spring and summer months.

References:

Braby, M.F., 2000. *Butterflies of Australia – Their Identification, Biology and Distribution*. vol 2. CSIRO Publishing, Melbourne.

New Distribution Records for Thecline Butterflies (Lepidoptera: Lycaenidae) in Australia.

Part I. – *Jalmenus*, *Hypochrysops*, *Hypolycaena* and *Rapala* –

Kelvyn L. Dunn

Summary

This paper, which involves two sections (Parts I & II), lists 19 new locations in Australia for 14 species of butterfly from the lycaenid subfamily Theclinae. The first



part covers four genera, namely *Jalmenus*, *Hypochrysops*, *Hypolycaena* and *Rapala*. The second part focusses on *Ogyris*. Each encounter-record is from a location that either falls outside of or augments the boundaries of the species' distributions, as interpreted from the range-fill maps provided by Braby (2000). The paper also discusses relevant locations discovered by others since 2000, namely those that lie close to any listed in this paper. Yet, in doing so, it does not (for the most part) reiterate historic distributions that underpin Braby (2000), from wherein readers may source much of that baseline information. The new locations for the species tabled provide ongoing evidence that there remains much to learn about the spatial distribution of theline butterflies across the continent.

Introduction

The adults of thelines may be patchy or localised in occurrence, which reduces their odds of encounter by random searching. Indeed, the lower detection rate for the smaller butterflies, including the thelines, has been a long-standing issue in the history of butterfly observation in Australia. That offset in encounter probability has affected the knowledge of their distributions nationwide, especially beyond the coastal and sub-coastal regions where survey has been sparse over the last century (Dunn & Dunn 2006). In particular, their tendency to perch for lengthy periods (especially females) and the rapid flight of males when defending airspace (despite many being brilliantly adorned) obviously lower their visual profile when compared with larger, slow flying butterflies which may patrol more openly and more widely. Yet, an experienced eye will help recognise potential haunts where site tenacious males may patrol regularly, and knowledge of the local food plants about which adults of both sexes may congregate or visit periodically, will likely up the tally of species recognised during snapshot surveys. Once sighted though, some canopy dwellers in this group may offer no opportunity for close inspection, which will make some difficult to identify by non-specialists (or even experts), especially when in silhouette against a bright sky, and will limit the usefulness of photography too (where this is the main means of record keeping in conservation reserves). My surveys in remote areas, which strategically honed in on knowledge of species groups and suitable habitats, augmented by directional transect-walking to help locate species on the wing, proved effective but the species coverage of those opportunistic surveys was still limited by a lack of time to seek the early stages of many species that might also be present. Nonetheless, the many new locations obtained for common and widespread butterflies (including those discussed from this group) unequivocally demonstrate that there remains much to learn, and that continued surveys with focus on the more elusive butterflies will enhance available knowledge on those groups concerned.

Methods (for Parts I & II)

Survey: To gain new records for this paper, I utilised a roadside explorative approach that involved counts of species (usually as adults) seen at numerous sites along major inland highways and byroads. The survey methodology described previously (see



Dunn 2015 and relevant references therein) equally applies to this piece and the trips it covers. Similarly, the methods used to measure distances and define locations to precision of within a kilometre of the actual site (as presented in the Table) can be sought in an earlier report (see Dunn 2013a). In addition, extended discussion and other recommendations to help describe locations effectively, and to avoid ambiguity, have been detailed elsewhere (see Dunn 2013b) and that source too will provide further reading, if required. I used a hoop net with a three-metre, extendable handle for lycaenids (wherever able) to maximise the number of useful records obtained per site. This helped achieve records hastily as much land needed coverage in the time available and whilst the weather remained suitable to achieve that. In areas that restricted direct sampling methods, extended watching (where time was available for this purpose) enabled photography of adults of many species; most of the images obtained usually included one or more characteristics enabling the identification of the adults encountered (see Dunn 2015 for commentary of this method, alongside recommendations for visual data gathering).

Identification: As per the previous report (Dunn 2015) and others in that series, I identified most of the theclines encountered (including those in the follow-on table in Part II) by in-hand examinations; in many cases, I retained the adults examined as **vouchers** (63.2%), irrespective of whether they were also photographed in the field. It follows then, that the percentage of vouchers in Tables 1 and 2 are very much higher than the frequency applicable to the full set of records obtained for all butterflies on the trips concerned. This is because, firstly, some theclines can be challenging to identify in the field (as discussed in the Introduction) and so require vouchers to underpin the field diagnoses. And, secondly, because the tables comprise only those records that represent interesting locations, which means on probability then, that vouchers were more likely to be deliberately retained on account of scientific newness of the locations. Very occasionally too, some adults examined merely to confirm their identification were subsequently released (**Rel.**) (0%, this paper). Where images are included, a superscript links the photos (usually video frames) to the records concerned. Records that standalone as image-only (meaning that the insects were not retained as vouchers) are marked as '**Photo**' (5.3%). The six (6) encounters (31.6%) recorded by observation-only are marked as '**Obs.**'; for four of these the identifications were certain (Category 1 – left unstated as default). 'Certainty' means that in each case I recognised sufficient characters to achieve that level of confidence. However, one observation was to a level of 'almost certain' (Category 2) as insufficient evidence was obtained to identify the adult involved to the highest level. Another is 'probable' (Category 3) for similar reason of a degree of identification uncertainty, and because the location involved is biogeographically divergent from the coastal plains where that species usually occurs; these limitations raise doubt and so reduce its measure of veracity, all facts considered. Doubtful field sightings, however, are those with a very low, or no level of confidence (linked to the



circumstances). These as such, fall below the threshold of usefulness, being improbable, and so are unlisted on that rationale.

Results

Table 1 lists eight (8) species (including one putative species not documented elsewhere) from eleven (11) new locations (arranged from north to south) across Australia; all sites fall outside (or if not, then very close to) the boundaries defined or inferred by Braby (2000) for the species concerned and so are new on that criterion. Those records considered worthy of individual comment due to their interesting circumstances, whether they be biological, behavioural or incidental in focus, include a superscript indicating a note is available. These notes may include references to encounters by other workers in the last decade or so, where their published new locations fall close to those listed in this report, and may be augmented by one or more historic references where deemed informative.

Table 1: New locations for species of Theclinae from beyond their known ranges in Australia

Species/Location	State	Geocode	Date	Format
<i>Hypochrysops delicia</i> Mt Kaputar summit (at lookout), Mt Kaputar N.P.	NSW	30°16'S, 150°10'E	13 Dec 2013	Photo ^{Figs 1-3}
<i>Jalmenus ictinus</i> Ivanhoe, off Elkington St.	NSW	32°54'S, 144°18'E	20 Oct 2011	Voucher ^{Note 1, Fig 4}
<i>Jalmenus daemeli</i> 79 km (by rd.) SSW of Sarina (adjacent to old highway)	Qld	21°59'S, 148°57'E	04 Nov 2012	Voucher ^{Note 2, Fig 5}
66.4 km NW by N of Clermont	Qld	22°22'S, 147°19'E	06 Nov 2011	Voucher
<i>Jalmenus evagoras</i> Jenolan Caves pumping station c. 1 km E of Caves House	NSW	33°49'S, 150°02'E	22 Dec 2009	Obs. ^{Note 3, Fig 9}
Jenolan Caves, car park c. 300 m SW of Grand Arch	NSW	33°49'S, 150°01'E	22 Dec 2009	Obs. ^{Note 3a}
<i>Jalmenus inous</i> 8 km NE of Denham, at airport road junction	WA	25°53'S, 113°35'E	15 Nov 2008	Voucher ^{Note 4}



***Jalmenus* sp. ‘Gulf Country’**

59 km (by rd.) NNE of Burke & Wills Roadhouse, N of Cloncurry	Qld	18°44’S, 140°30’E	14 Oct 2012	Voucher –juv. ^{Note 5}
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Hypolycaena danis

Mt White summit, near Coen, CYP	Qld	13°58’S, 143°11’E	06 Jan 2002	Obs.
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Rapala varuna

Little Laura River, at 12 km WNW of Laura, CYP	Qld	15°32’S, 144°21’E	11 Jan 2001	Voucher
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Fingal Head, along walking track to lighthouse	NSW	28°12’S, 153°34’E	28 Apr 2015	Obs. ^{Note 6}
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Key to Table:

Note 1. Several adults of *J. ictinus* were found flying about the upper foliage of tall (about seven metres high), mature wattles. The branches were laden with meat ants *Iridomyrmex* sp. *purpureus* group (personal identification), as evidenced in the net when a butterfly was secured for identification. These wattles, mature trees of which were scattered in heath-woodland on the outskirts of town with some supporting clumps of the Grey Mistletoe, *Amyema quandang* (Loranthaceae), were likely Myalls (*Acacia pendula*; Mimosaceae) – a known food plant of this butterfly (Braby 2000). No juvenile stages were evident on low foliage so it seemed the population was localised among the inaccessible upper branches. The butterfly is likely to be on the wing only during the hotter months in the region as a follow-up visit during very suitable weather, earlier in spring on 24 Sep. 2012, involving a watch of 70 minutes (commencing at 09:50 hours, AEST) revealed no adults.

Note 2. Two adults of *J. daemeli* were seen flying about grey coloured wattle saplings, which seemed to be Brigalow (*Acacia harpophylla*; Mimosaceae) growing in grassy eucalypt-woodland, about 2 km N of Bean Tree Gully (creek crossing). This location is an inland boundary record bridging the gap between Lotus Creek (J. Macqueen in Braby 2000), farther south on the same highway, and Hughenden (S. Brown in Common & Waterhouse 1981) in the north. The wattles (all 1-2m high) hosted a pupa, several larvae and a cluster of eggs (Figures 6-8, respectively). The ant, *Iridomyrmex rufoniger* (det. S. Shattuck), was keenly attending treehoppers (Membracidae) and scale on the stems of these wattles and in that linked association, was perhaps secondarily (rather than primarily) attending the larvae and pupae of the butterfly. I suspected that the lycaenid juveniles were purely incidental



attractants given they were in low numbers, and yet despite their ant guard, some of the older larvae had been parasitised by tachinid flies. In similar habitat at 86 km SSW of Sarina I again found ants, presumably of that same species, attending treehoppers on another roadside area of wattle recruitment but detected no *Jalmenus* presence during a quick inspection (c.10 minutes).

Note 3. Many adults of *J. evagoras* were seen near the pumping station, where they were patrolling the upper foliage of tall phyllodinous wattles (*Acacia* sp.; Mimosaceae), and occasionally perching on leaves of twiners growing amidst them in the canopy. Perched adults (see example in Figure 9) were identified to species aided by a zoom lens of a videocam but without this magnification (or use of binoculars), they would not have been recognisable to species from ground level. *J. evagoras* is very rarely associated with tall wattles and this was the first time I had seen adults patrolling the canopy, where they were presumably associated with an arboreal ant infestation. The colony was localised across two large trees; there were no adults flying around the low shrubbery nearby and the early stages were not present on any wattle sapling inspected, and which lacked a conspicuous ant presence. (3a). Farther afield, wandering adults (possibly females exploring the habitat) were seen flying near the rear car park of the Caves House, and although these were all low down they were not localised about hosts plants with juvenile stages. Colonies no doubt existed somewhere within a few hundred metres of those strays as the species is characterised by discrete and highly localised populations, and the adults (especially males), as historically reported, “seem reluctant to fly far from the trees on which they have been bred” (McCubbin 1971: 85). Jenolan Caves represents a cusp record or is marginally outside the range-fill map indicated by Braby (2000), and for that reason, is important in defining its western limits at this latitude in the Blue Mountains region.

Note 4. *J. inous* (subspecies *bronwynae*) is locally common in the Denhan area. This new location, where a single adult was collected, is marginally north of the cluster of sites that Johnson and Valentine (2007) documented as a part of their description of that form. The species is normally common where it occurs but it was likely a little too late in the season at their most northern location, and the peak abundance had passed.

Note 5. This population of *Jalmenus* species ‘Gulf Country’ was localised to a small area of Gidgee wattle recruitment in mixed woodland (about 48 metres a. s. l.), but since no adults were visible to help pinpoint the colony at that time, its presence was far from obvious. Habitat recognition for this butterfly group was a key factor in locating it. The wattle species involved was almost certainly *Acacia cambagei* (Mimosaceae), and these particular roadside saplings (then 1.0-1.5m tall), had likely sprung from germination events



linked to the atypical wet events seen during the 2010-11 and 2011-12 seasons. Most wattles had small ant aggregations along the stems, and a closer inspection of these revealed treehoppers and possibly scales (on some plants) as the main attractants. I reasonably supposed that lycaenid larvae might also be present, and a meticulous search of those ant-infested wattles yielded about a dozen larvae of various ages of *Jalmenus* sp. 'Gulf Country' in 85 minutes. The ant, *Iridomyrmex rufoniger* (det. S. Shattuck), which is a widespread species in eastern Australia, attended the larvae and served as the guard. The older larvae, which usually rest on upper stems during the day, were accompanied by just a few ants each (between four to nine in direct contact with any single larva, at any one time), not a swarm; and although attendance was not high, none of the larvae yielded any parasitoids wasps or flies. Yet those small aggregations of ants at certain points along the stems sometimes gave away the larval presence but on most occasions, the attraction proved to be treehoppers only. Larval presence seemed opportunistic from the butterfly's perspective (and not the cause of the ant occupancy), albeit that ant-attendance is obligatory for its young and no larvae were unattended.

The adults reared were surprisingly variable and I was perplexed as to what species they might belong to; some adults show similarity to *J. daemeli* having filamentous tails, whereas others resemble *J. icilius* being anural, and still others have intermediate or stumpy extensions to the hindwing rather like *J. inous* (from WA). The butterfly is unrelated to *J. lithochroa* (from SA); in that southern species of very restricted distribution, the forewing shape is more angular and its mature larva is very distinctive. The larvae from the Gulf Country match closely with those of *J. daemeli* (from SSW of Sarina, Qld – see Figure 7), *J. icilius* (from near Riddells Creek, Vic.) and *J. inous* (from Mundaring Weir, WA, although some experts believe that last population to be merely another form of *J. icilius*). At the time of report, I have not found any consistent characteristics that will distinguish these three species at the mature larval stage, using the photographs I have taken over the years. A tailed female of the 'Gulf Country' form is presented (Figures 10-12) for readers to inspect. I gave a pupa to Peter Valentine when I visited him on my return to the coast (in 2012), and he reported later that the resultant adult was a tailed example.

Note 6. Historically, Illidge (1898) recorded *R. varuna* in the Brisbane area in southern Queensland, and regarded its presence there as a rare event of vagrancy. He wrote that he had not seen one in the region himself, at that time of report, but relayed that a (then) contemporary worker, W.H. Miskin, had. Indeed, Miskin collected one at Toowong in April 1874 (Hancock 1995), and Waterhouse (1903) subsequently listed Brisbane in the distribution as the southernmost limit then known. Decades later, Lambkin



(1983, p.58) affirmed little change, stating that it is “normally rare in the Brisbane area” based on his personal experience. Supportively, Hill (1986) surveyed four sites near Brisbane (namely, the Brisbane City Botanic Gardens, the Toohey Forest near Nathan, Redland Bay and Mount Cotton), each on a monthly basis spanning a 12-month period, and recorded *R. varuna* only at the Botanic Gardens. And, it was still a rarity during my three years of residence south of Brisbane in the early 1990s. Indeed, I did not see any adults in the areas I surveyed that lay beyond the southern limit known in that era, that being at the DPI complex at Indooroopilly, recorded in 1981 (Lambkin 1983). However, I recently encountered an adult at Eagleby (near Beenleigh, Qld) in 2015; moreover, at a site where I had frequently watched for butterflies in the 1990s. It was perched on Tulipwood, *Harpulia pendula* (Sapindaceae) in a residential garden in Albert Street, and that particular tree (which is not a recorded food plant for *R. varuna*) once supported a breeding colony of *Deudorix diovis* about which the adults often patrolled. I was surprised to see *R. varuna* now perched where *D. diovis* was normally stationed, and with none of the latter present to contest its perch site. Reports from south of Indooroopilly began to accumulate at Corinda by 1998 (De Baar 2000), in the Toohey Forest, Nathan by 1999 (Schmidt & Rice 2002), and near Nerang on the Gold Coast by 2005 (Moss et al. 2005). Fingal Head is now the most southern location known and that encounter, based on a single adult seen some 10 years on since those published accounts, is the first record for New South Wales. The two personal records in 2015, alongside the report from a park in Thornlands in the Redlands Shire in 2005 (Hughes 2005) and the Gold Coast regional record (mentioned above) may be growing evidence that *R. varuna* has extended (or is still extending) its range southward over recent decades.

Discussion (for Parts I & II)

Each of the 19 new records adds insight into the distribution of those species of butterfly listed and each helps fill knowledge gaps evident in their distributions (as based on the range-fill maps by Braby 2000). For one species listed, the new location links (or partially links) areas of occurrence and adds significantly to available knowledge, giving insight into a much broader distribution. Evidence of *Jalmenus ictinus* remotely inland at Ivanhoe, NSW, northeastwardly connects the broad distribution in eastern Australia with the isolated and seemingly disjunct locations of Fowlers Gap (J. Anderson & A.D. Bishop in Braby 2000) and Dolo Creek, 140 km E of Broken Hill (R.A. Eggleton in Braby 2000) in the central west of New South Wales. Braby (2000) did not infer that the distribution was connected because of the wide separation involved but the new intervening record now suggests an inland projection or perhaps raises the question as to whether the species has an even a broader albeit scattered presence in the outback of that state. For *Hypochrysops delicia*, the evidence of several males feeding at *Leptospermum* on an escarpment in



an isolated montane area in northern NSW indicates an occurrence that would likely be a relic of earlier climates and one that is now biogeographically disjunct from the main areas of distribution. Daniels (1979) surveyed Mt Kaputar National Park in the 1970s and Atkins (1985, 1997) provided additional records from his visits, but neither observer recorded any Jewel butterflies. For other theclines, the extensions recorded may be minor, such as are the locations for *Lucia limbaria* and *Ogyris zosine* (see Part II for each) and *J. inous*, each of which provides a northernmost occurrence in the regions under consideration.

Most of these new records likely link into an inadequate knowledge of species' distributions due, for the most part, to a lack of regular exploration by insect collectors, both spatially and across seasons. The record of *Rapala varuna* in northern New South Wales would seem exceptional, given extensive survey in that part of Australia over many decades by numerous workers without previous evidence of it (Dunn & Dunn database). For that species, unusual climatic conditions in eastern Australia (applicable for some of the years involved) may have enabled sporadic range expansion and temporary meta-populations to establish, some of which perhaps held ground to become new source populations for later expansions. An alternative hypothesis is that human interference in one of its varied forms, such as the establishment of host plants in gardens and parklands (which has gained popularity over the last two decades), may have underpinned a gradual range creep to at least the Eagleby area. That supposed creep probably includes the Gold Coast Shire residential area too and perhaps even to Fingal Head, if the new southernmost record is not a rare event of vagrancy from a population somewhere to the north.

For the putative new *Jalmenus* species 'Gulf Country' (which may be allied to *J. daemeli*), almost nothing is known about its broader distribution other than that it has a radial focus, perhaps centred somewhere near Burke & Wills Roadhouse based on the three sites that I discovered, albeit two are close together. Gidgee (*Acacia cambagei*) is widespread in the inland of Queensland and so the Gulf Country form may have a broad distribution, perhaps extending into outback central Queensland or farther south. The butterfly's woodland habitat seems linked to moderately fertile clay soils where the host plant proliferates (Fensham & Fairfax 2005). The butterfly was not seen about the Roadhouse itself (the habitat is dissimilar there), but further searches of Gidgee saplings along roadsides in the broader region may reveal sites close to it. It has been proposed that Brigalow – a known host of *J. daemeli* (Braby 2000) – is an ecological analogue of Gidgee, with the latter species occurring in regions of greater aridity but where the clay soils it utilises provide more available moisture during drought (Fensham & Fairfax 2005). One may be tempted to speculate that the Gulf Country form by corollary may replace *J. daemeli* (if not an actual subspecies of it) in those more arid regions and may have separately evolved with Gidgee. Trials of about a dozen Gulf Country larvae on fresh young Brigalow foliage (as an alternative food) – identical foliage to that given simultaneously to *J. daemeli* larvae – had mixed results with the former, which suggests the Gulf Country form



may not occur in the less arid regions where *J. daemeli* uses its own specific range of hosts. Despite searching, I could not obtain larvae of *J. daemeli* around Townsville (including at sites where I knew it once occurred), and at which time suitable quality foliage of Gidgee was still on hand to trial larvae on. Peter Valentine remarked that a cyclone had wiped out the populations he knew of at Kelso, and those near the University seemed to have suffered from changes in land use. Later, an absence of fresh foliage of Gidgee prevented reverse host trials with *J. daemeli* larvae by the time the latter were collected along the old inland highway, SSW of Sarina.

Jalmenus icilius poses a curious situation in New South Wales. I have seen occasional tailed examples in museum collections, including one or more taken in the Australian Capital Territory, and some collectors have been aware of this situation for many years from their own field studies. I am not sure whether these variant individuals are part of the local variation in some populations or whether they are a sympatric (or parapatric) species with its own host or host range. I found a prominently tailed *Jalmenus* species (rather similar to *icilius*) breeding on Myall recruitment along a roadside near Tooraweenah, in inland New South Wales. There is also a similar specimen from 10 km W of Gunnedah in the D'Apice collection (ANIC) which had been placed as *J. daemeli* by the collector and may be the same form (or species) as the population near Tooraweenah (which is not *J. daemeli*). Survey for *Jalmenus* in the Ivanhoe region of central western New South Wales, particularly during the summer and autumn also needs attention. The tailed variety of *J. icilius* may be there as well, perhaps linked to Myall, although I found no *J. icilius* on my two visits during September and October. However, a series of specimens I collected farther west, near Broken Hill in 1997 and which were associated with *Acacia tetragonophylla* (Mimosaceae) (see Dunn 1998) were all anural and typical of *J. icilius*. The tailed variety of *J. icilius* reared from Myall saplings showed little variation and appears quite distinct from the 'Gulf Country' form (which seems closer to *J. daemeli*), although again larvae from near Tooraweenah (seemingly) cannot be distinguished from these other *Jalmenus* species and forms either. The host plants may be an import cue to focus on in order to unravel this variation in the adults.

Acknowledgements

I thank Michael Braby (ACT) and Peter Valentine (Qld) for their thoughts on the identity of the *Jalmenus* adults reared from the Gulf Country, and Ted Edwards for access to the *Jalmenus* collections at the ANIC, Canberra, including the recently acquired John D'Apice collection. Steve Shattuck (ANIC, CSIRO, ACT) identified the *Iridomyrmex* species (where indicated in the text) from specimen vouchers. The late Russell Best (Vic.) identified the host of the putative new *Jalmenus* species from the Gulf Country as almost certainly *A. cambagei* based on photos of saplings and foliage (but with differential diagnoses as possibly *A. hemignosta* or perhaps *A. cowleana*, given no flowers or seedpods were available). Terry Woodger (Qld), who examined actual foliage, described the plant as "Gidgee, probably *A. cambagei*". His identification was also in agreement with its earlier field recognition as 'Gidgee' by a



local farmer, who knew it as unpalatable to livestock (although this common name, used casually in the Outback, is not exclusive and can include other similar species of wattle in that region). Finally, John T. Moss (Qld.) offered helpful suggestions to improve the manuscript in places.



Fig. 1



Fig. 1A



Fig. 2



Fig. 3

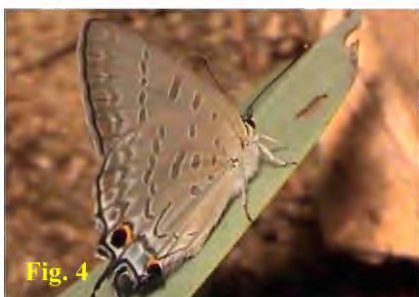


Fig. 4



Fig. 5

Fig. 1. *H. delicia* male under side – Mt Kaputar NSW, at flowers of *Leptospermum* sp. adjacent to escarpment at summit.

Fig. 1A. *H. delicia* Male under side enlargement from Fig. 1.

Fig. 2. *H. delicia* male under side – Mt Kaputar NSW, at flowers of *Leptospermum* sp. adjacent to escarpment at summit.

Fig. 3. *H. delicia* two males: upper and under side – Mt Kaputar summit, NSW, at flowers of *Leptospermum* sp. at summit.

Fig. 4. *J. ictinus* male under side – Ivanhoe, NSW, perched on host plant.

Fig. 5. *J. daemeli* male (underside) perched on host plant – 79 km SSW of Sarina, Qld.



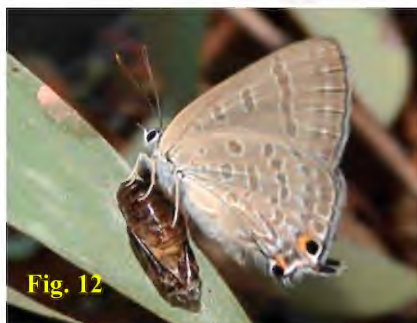


Fig. 6. *J. daemeli* pupa – 79 km SSW of Sarina, Qld.

Fig. 7. *J. daemeli* larva – 79 km SSW of Sarina, Qld.

Fig. 8. *J. daemeli* egg batch – 79 km SSW of Sarina, Qld.

Fig. 9. *J. evagoras* male upper side – Jenolan Caves pumping station, NSW – on vine in canopy, photographed from ridge, with zoom (image from video used to identify adult in the field).

Fig. 10. *J. almenus* sp. ‘Gulf Country’ female under side – 59 km NNE of Burke & Wills Roadhouse, Qld – newly eclosed with pupal case in background.



Fig. 11. *Jalmenus* sp. 'Gulf Country' female under side – 59 km NNE of Burke & Wills Roadhouse, Qld – newly eclosed.

Fig. 12. *Jalmenus* sp. 'Gulf Country' female under side – 59 km NNE of Burke & Wills Roadhouse, Qld – newly eclosed resting on pupa from which it had just emerged; fresh pinkish meconium (waste body fluids extruded after wing expansion) visible on leaf.

Photos Kelvyn Dunn

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The suspicious underworld activity of butterflies and caterpillars – *Paul Klicin*

Way back in December of 2015, I was doing some work at my 5 year old daughter's soon to be school at Daisy Hill, Queensland, when I spotted a flash of blue darting about the gardens. I knew straight away what it was, because 12 months previously I discovered some strange looking caterpillars on a very young Camphor Laurel tree on another job and at the time I had no idea what they were. I remember the small tree was almost bereft of leaves and even with my limited knowledge of such things at the time I knew there would not be enough food to sustain these hungry caterpillars. Besides, I had never seen anything like them before and I wanted to identify them. I extricated 3 of them for further research.

Fast forward 12 months, and after identifying my previously unknown caterpillars as the Blue Triangle, I watched as the female butterfly laid several eggs on a young Camphor Laurel tree which also accommodated quite a few early instar resident caterpillars. After speaking with the grounds keeper, I discovered that he was intending to remove the Camphor Laurel tree so I potted the young tree and headed home with, what finished up being, approximately 35 Caterpillars.

Considering I had previously never raised more than 1 or 2 Monarch and Orchard Swallowtail caterpillars at a time, I knew I was in deep, straight off the bat. I had previously raised a few Monarchs and Orchard Swallowtails with my daughter to teach her about the butterfly life cycle. The problem was I was now hooked. Unfortunately, none of the 3 original Blue Triangle caterpillars from 12 months ago survived and out of the 35 caterpillars I brought home on the young Camphor Laurel tree, only 2 butterflies emerged (1 being deformed). Ironically, neither did the Camphor Laurel. The one successful Blue Triangle butterfly that was released must have been the most photographed butterfly in the history of lepidoptery.

In early January 2016, I spoke with former Club President Ross Kendall who kindly invited me over to his house and gave me a guided tour of his very impressive butterfly house. He then proceeded to set my head to spinning as he blurted a plethora



of host plant botanical names. What have I gotten myself into.....I'm in way over my head, I thought. It all just seemed too hard now and maybe I should just stick with a few Monarchs and Orchard Swallowtails, because after all, it was easy to raise those caterpillars when I was just a kid.....or I could just go fishing instead.

A couple of days later and after my head stopped spinning things began to develop further.

Co-incidentally, and on a totally unrelated chance encounter, I rang a telephone number associated with the Richmond Birdwing butterfly that was displayed on the side of a van I spotted. This is how I met Lois Hughes. Lois was kind enough to invite me to her magnificent property located near Mount Cotton and fortunately not far from where I lived. I was given another lesson on how much I didn't know about butterfly host plants, but determined to learn.

By now I was spending way too much time exploring local bushland near where I lived. This became evident when one afternoon as I was once again emerging from local bushland wearing a backpack and managing to look tremendously suspicious, I was approached by a member of the local constabulary who after being notified by a local resident thought it wise to informally interrogate me as to the purpose of my expedition within the bush. For a fleeting moment the thought crossed my mind to jokingly say "Just checking on my cannabis plants officer" although I would not have blamed an onlooker for being completely mystified, as I then proceeded to remove a plastic container from my backpack and showed some fresh green leaves to the police officer.

To be honest, I believed it would only be a matter of time an event such as this would transpire.

I must now confess that I wore a cap and dark sunglasses with my shirt collars folded up each time I returned to that same area of bushland in an attempt to look even more suspicious than how I had previously looked. I figured that if I was going to be suspicious, I may as well really look the part.

During one of my early bush adventures I discovered by chance 2 more caterpillar species. I was finding caterpillars I had no idea of what butterflies they would become on plants I knew nothing about. They turned out to be the Evening Brown feeding on (*Imperata cylindrica*) and Leafwing (*Doleschallia bisaltide*) feeding on a lone ragged looking Love Flower (*Pseuderanthemum variable*).

My wife was a little concerned at first, thinking I had contracted some terminal disease when I told her I had '*Melanitis*' (*leda*) ('Evening Brown').

Fast forward to early May and 6 months after bringing home my first caterpillar to wow my daughter with, I have now raised 14 different species of butterflies (consisting of over 300 caterpillars) those being:

- Wanderer/Monarch (*Danaus plexippus*)



- Lesser Wanderer (*Danaus petilia*)
- Blue Triangle (*Graphium sarpedon*)
- Evening Brown (*Melanitis leda*)
- Leafwing (*Doleschallia bisaltide*)
- Orchard Swallowtail (*Papilio aegaeus*)
- Glasswing (*Acraea andromacha*)
- Common Crow (*Euploea core*)
- Swamp Tiger (*Danaus affinis*)
- Meadow Argus (*Junonia villida*)
- Varied Eggfly (*Hypolimnas bolina*)
- Six Line-Blue (*Nacaduba berenice*)
- Black Jezebel (*Delias nigrina*)
- ?Presently Unidentified?

www.facebook.com/butterfliesandcaterpillars/

RAINFOREST GARDENS - Continuing Graham McDonald's 4 part series of "Gardening for Butterflies" which was originally printed beginning with issue (#17)

PART 3 - June 2000 of the BOIC Newsletter.

Rainforest plants for butterflies can be grown on almost any soil type provided that soil drainage is adequate, (ie water must not collect after rain) and a thick layer of organic mulch (minimum 10 cm thick) is maintained for at least 4 years after planting. This discourages weeds, promotes soil fertility (via worms), keeps the soil cool in summer, warm in winter and also improves the drainage and aeration of heavy clay soils.

The minimum area of such a plot is regarded as 10 metres x 10 metres and should be a square, oval or round shape to minimise 'edge effects'. If your land area is quite small then choose a framework of smaller canopy trees (their roots will not be a problem). These plants are listed below with the butterfly species in brackets.

Small Canopy Trees

* *Alectryon connatus*, *A. coriaceus* (Large Purple Line-blue, Hairy Line-blue, Glistening Line-blue, and some other "blues")

* *Capparis arborea* (Caper Gull, Pearl White, Caper White, Striated Pearl-white)

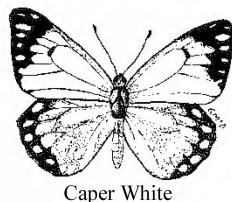
* *Cryptocarya triplinervis* (Blue Triangle)

* *Cupaniopsis newmanii* (Blues - various)

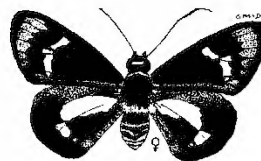
* *Diospyros australis*, *D. fasciculosa* (Bright Forest-blue)

* *Neolitsea dealbata* (Blue Triangle, Eastern Dusk-flat)

* *Polyscias elegans* (Dark Pencil-blue Blue)



Caper White



Regent Skipper

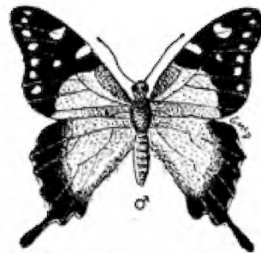


- * *Wilkiea macrophylla* (Regent Skipper)
- * *Pipturus argenteus* (White [=Jezebel] Nymph)

If your land area is larger you may plant a canopy of taller trees first (plant at 2 metre - 2.5 metre centres) and then fill in with understorey species and vines in later years.

Larger Canopy Trees

- * *Podocarpus elatus* (Eastern Dusk-flat)
- * *Melicope elleryana* (Nectar Tree)
- * *Endiandra* spp. (Blue Triangle, Macleay's Swallowtail, Eastern Flat)
- * *Cryptocarya erythroxylon* (Blue Triangle)
- * *Castanospermum australe* (Pencil Blue)
- * *Alphitonia excelsa* (Copper Jewel, Fiery Jewel, Indigo Flash, Small Green-banded Blue)
- * *Cassia marksiana* (Lemon Migrant)

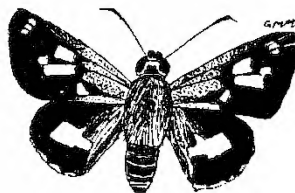


Macleay's Swallowtail

Rainforest shrubs and understorey plants may be added now or within 1 - 2 years of planting the trees. Some examples of butterfly hosts for a rainforest plot are

Shrubs and Understorey Plants

- * *Lomandra hystrix* (various Skippers)
- * *Lomandra longifolia* (various Skippers)
- * *Lomandra spicata* (Ornate Ochre)
- * *Dianella caerulea* (Dingy Grass-skipper)
- * *Gahnia clarkei* (Swordgrass Brown, Painted Sedge-skipper)
- * *Pittosporum multiflorum* (Bright Copper)
- * *Citrus australasica* (Orchard Swallowtail, Capaneus [=Fuscous] Swallowtail)
- * *Micromelum minutum* (Orchard Swallowtail, Capaneus Swallowtail)
- * *Wilkiea huegeliana* (Regent Skipper)
- * *Zieria smithii* (Orchard Swallowtail)



Symmommus Skipper

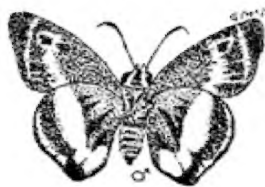
Care should be exercised when planting large vines such as *Callerya* and *Mucuna* as they can easily overrun a small rainforest plot. They will need a heavy supporting tree or trellis. When in doubt, choose smaller vines such as *Dioscorea* or a vine which can be pruned as a shrub such as *Melodorum*.

Vines

- * *Callerya megasperma* (Pencil Blue, Narrow- banded Awl)
- * *Dioscorea transversa* (Pied Flat)
- * *Melodorum leichhardtii* (Pale Triangle, Four-bar Swordtail)



- * *Mucuna gigantea* (White-banded Plane, Green Awl)
- * *Parsonsia straminea* (Common Crow)
- * *Pararistolochia praevenosa* (Richmond Birdwing, Clearwing Swallowtail)
- * *Secamone elliptica* (Common Crow, Blue Tiger)
- * *Smilax australis* (Bright Forest-blue, Coral Jewel)



Green Awl

The advantages of growing a rainforest are many and include very low or low maintenance in years to come, plants are long-lived and hardly ever need replacing and the trees provide a framework for other plants which add to the ‘lush tropical’ atmosphere.

BOOK REVIEW



Butterflies of the World
ADRIAN HOSKINS



BUTTERFLIES of the WORLD by Adrian Hoskins
F.R.E.S. – Hardback. 315 pp. 24x19x2.4cm. Reed New Holland Publishers Pty.Ltd. 2015 ISBN 978 92151 7334 RRP \$35 – Reviewed by *Alan Hyman*

There have probably been many other books published with this (or a very similar) generic title. One example is *Butterflies of the World* (which appeared in 1974) by H.L. Lewis. A substantial work including nearly 7000 images of set butterflies to a reduced scale, divided into geographical regions within which all families and examples of most genera were represented. In essence a splendid reference book, almost a ‘global coffee table field guide’ although much too cumbersome for a kit bag!

Fast forward to 2015. The new volume bearing this title makes no attempt to be a universal directory but has its own philosophy. The volumes’ overarching purpose is intended as ‘a celebration of the immense beauty and great diversity of butterflies across the world’. Its author, Adrian Hoskins, is a Fellow of the Royal Entomological Society, much travelled throughout the world studying and photographing butterflies in Europe, South America, Africa and South East Asia. He also worked for many years in various volunteer capacities with Butterfly Conservation (UK) and currently organizes educational entomological expeditions around the world.

The book is organized into a logical sequence of sections. There is a biographical entry on the author, then a dedication to the naturalists Henry Walter Bates and Alfred Russell Wallace, followed by acknowledgements and photo credits. The book proper commences with an introduction and table of contents which includes substantial chapters on Origin and Evolution, Butterfly Biology (with sub-sections including anatomy, lifecycle, natural enemies, strategies for survival, migration and dispersal), The Butterfly Families, Habitats and Conservation, finishing with a glossary and



index. Before the main body of the work there are two tables. The first lists all the Lepidoptera with suborders, the superfamilies within each plus their common names. The second tabulates the seven accepted butterfly families with all their subfamilies, again with the addition of their common names.

The photographs of living insects in their natural surrounds can only be described as stunning and are of a uniformly high quality. Most are by the author with a sprinkling from other contributors. From an Australian perspective, the number of endemic species depicted is however disappointingly small. Some familiar butterflies with much wider distribution such as the Monarch (*Danaus plexippus*), the Blue Triangle, aka Common Bluebottle (*Graphium sarpedon*), the Chequered Swallowtail, aka Lime Butterfly (*Papilio demoleus*) and others are included but all were photographed in exotic locations. Australian endemic species are represented by just the Splendid Ochre (*Trapezites symmopus*) and the Common Brown (*Heteronumpha merope*). It is also somewhat anomalous that an image of the male Queen Alexandra's Birdwing (*Ornithoptera alexandrae*) – the world's largest butterfly – uniquely appears in the book as a size-reduced set specimen, especially considering that a life-size Rajah Brooke's Birdwing (*Trogonoptera brookiana*) feeding in the wild is depicted immediately above. (In the overall context of the book however, these are minor criticisms, the sheer magnificence of the colour combinations, patterns, shapes and variation of the butterflies being superbly captured). Individual favourite images are difficult to choose but standouts include the orange, gray, black and white Glasswing Metalmark (*Ithomeis aurantua*) and Hayward's Gold Spot (*Dallas spica livia*), a brown-black Skipper with hyaline yellow and orange spots (both from Peru), the tomato coloured Mabille's Red Glider (*Cymothoe mabillei*) from Ghana and the curious little Brazilian white Amazon Snowflake (*Leucidia brephos*) which flutters aimlessly' and 'never progresses more than a few metres away from its starting point'.

The text includes much informative lepidopteran material but it is never dry, equally accessible and appealing to the specialist and general reader alike. Adrian Hoskins' detailed personal account of his coming across 'over 100 pristine *T. brookiana* settled on a small patch of ground' in Perak in 2009 is reminiscent of Alfred Wallace's famous encounter in Batchian with a new species of Ornithoptera, in its emotive and descriptive content. After the traditional families have been covered, the chapters conclude with a brief discussion of a seventh grouping, the Hedyliidae, 'nocturnal in behavior and decidedly moth-like in appearance', borne out in the photograph of the one example illustrated – the Mottled Macrosoma (*Macrosoma beliconaria*). Originally considered to be moths, the insects were found to have 'more in common with the five traditional butterfly families than with any of the moth families. Consequently they were transferred to the Papilionoidae and the 36 known Hedyliidae species are now regarded as butterflies'.

The passionate subtext for the entire work is an urgent plea to preserve butterflies and the environment. The opening sentence of the 'Habitats and Conservation' section



sets the tone. ‘The human race has radically altered the environment of the Earth, while showing little concern for the millions of other species that have an equal right to exist on it’. Urban expansion, ‘changes in forest management and agricultural policies’ and habitat loss are just some of the factors Hoskins details as the causes for the decline in butterfly numbers and species (as indeed other wildlife and plants). If a wake-up call was ever given, this is it. To quote from another paragraph in this final section of his book ‘Most biologists now believe that within a few decades habitat loss will result in massive losses in butterfly diversity .. and by the end of the 21st century it is quite possible that butterfly diversity will be measured in terms of only a few hundred species worldwide’. The author concludes by making practical suggestions to help ‘slow down the rate of decline’ including active personal involvement in conservation organisations and support for ecotourism.

If you love butterflies, indeed the whole natural world, and have a concern for their future, this book will be an essential library addition.

IN THE GARDEN



I found this beautiful grasshopper trapped in our vegetable enclosure in our garden at Clarence Town, NSW during February 2015. It was almost 8cm long. I identified it as a 32-spotted katydid (*Ephippitytha trigintiduoguttata*, also known as *Ephippitytha 32-guttata*).

These fascinating katydids live in the tops of gum trees and females lay their eggs along the edges of the leaves. Males make soft calls at night. Their main food source is gum leaves but they also eat male cicadas. They are able to do this by mimicking the female cicada’s clicking sound of many different species of cicadas.

The katydid was sitting perfectly still on a capsicum leaf and in one of the photos looks ready for dancing with those red shoes!

Louise Sorensen



Boondall Wetlands excursion – 13th February. 2016

Lois Hughes

Heavy rain delayed our walk but in the shelter of a huge shed, we enjoyed our lunch and welcomed Paul, a very enthusiastic new member.

Surrounding the shed, a colony of Swamp Tiger butterflies (*Danaus affinis*) hovered around their flourishing host plants, the Mangrove Milk Vine (*Cynachum carnosum*). These vines were growing in the shade beneath the tree canopy, amongst other shade loving plants, in this seemingly moister area. The surrounding bushland through which we walked was very dry.

A small group, led by Russel Denton, walked along one of the many trails which wind through this extensive conservation area.

We were delighted when Russel drew our attention to a very active native stingless bee's nest in the hollow of a tree. Another highlight was the Glasswing female (*Acraea andromacha*) depositing her numerous eggs on the leaves of a *Passiflora* sp. vine which also carried a final instar caterpillar.



Glasswing eggs



Glasswing female (*Acraea andromacha*)

Photos Paul Klicin



Glasswing larva – Photo Paul Klicin

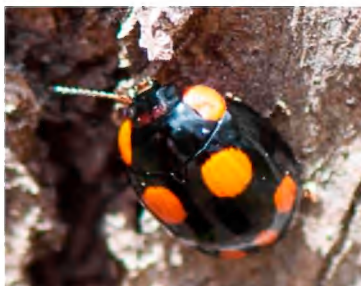
A small, but spectacular Whistling Moth (*Hecatesia fenestrata*) proved too elusive to photograph, flying off into the undergrowth and lost to sight. Several males and one female Big Greasy or Clearwing Swallowtail (*Cressida cressida*) hovered above the grasses but we failed to find its host plant, a ground



scrambler, *Aristolochia meridionalis*, at this location. A final instar caterpillar, secreted in a folded blade of tall grass, caught Paul's eye, with its bright green body and black horns, being familiar to him as he had raised many. It was that of the Evening Brown butterfly (*Melanitis leda*) several of which we disturbed in the undergrowth. A really handsome grasshopper, along with some ladybird beetles, was also encountered amongst the undergrowth.



Evening Brown larva and adult
Photos Paul Klicin



Above – Unidentified grasshopper
Above left –Ladybird probably *Dicranosterna* sp.
Below left – Ladybird *Paropsisterna sexpustulata*
Photos Jill Fechner

Thank you, Russel, for leading us through this bushland which you love so much.



Mistletoe Book Launch – *Alisha Steward*

Saturday 16th April 2016 marked a hugely successful and memorable event for our club, with the official launch of our publication 'The Mistletoes of Subtropical Queensland, New South Wales and Victoria' written by John Moss and Ross Kendall. The launch was held at the Queensland Herbarium at Mount Coot-tha and was well attended by more than 50 members and guests. To date, almost 200 copies of the book have been sold, with many outstanding orders still to be filled.

The launch commenced with BOIC's new president, Frank Jordan, providing an introduction, followed by an in-depth presentation by Ross McKinnon. Ross and John then described their personal journeys in producing the book - from an idea conceived almost a decade ago, to the impressive 134-page finished product full of descriptions, maps, line-drawings, colour photographs and beautiful paintings.

The formal presentations were followed by socialising in the foyer, with delicious treats and drinks for afternoon tea. An enjoyable afternoon was had by all. Many thanks to the members who organised the launch, assisted with book sales, and contributed food and drink. Thanks also go to Dr Gordon Guymer from the Queensland Herbarium for providing the venue.



Lois Hughes, John Moss, Ross Kendall and
Glenn Leiper – Photo Jill Fechner



Entrance to the Queensland Herbarium
Photo Alisha Steward

BUTTERFLY AND OTHER INVERTEBRATES CLUB PROGRAMME

An excursion to Pooh Corner, Wacol

What: Take a walk through this interesting reserve which has open forest and a range of interesting host plants. It has been reported that there is a resident Platypus in a waterhole along Sandy Creek.

When: Saturday 16th July 2016 from 10 am

Where: Meet at the Pooh Corner Environmental Centre. The Centre is on the southern side of Wolston Road, which runs between Wacol Station Road and Spine Street, Sumner Park. It has a car park, public toilets, a picnic area and electric barbeques.

What to bring: Hat, walking shoes, camera, lunch.

RSVP: Register with Paul Klicin (0411 031 406)

(Programme cont. next page)



Planning and General Meeting

What: Next committee meeting will be held at the Hughes' property at Mt. Cotton and is for Committee members only. It will be followed by an excursion for members into conservation areas in the locality from 1 pm.

When: **Saturday, 6th August, 2016, from 10 am to 1 pm**

Meet: At Lois and John Hughes' property at 1 pm

Bring: Lunch, if required, and wear covered shoes.

RSVP: Lois (3206 6229) for directions to the property and where to park.

2016 Native Flower Show and Plants Market

What: We will have a display at this event.

When: **Saturday 17th September and Sunday 18th September**

Where: Brisbane Botanic Gardens, Mt Coot-tha

DISCLAIMER

The magazine seeks to be as scientifically accurate as possible but the views, opinions and observations expressed are those of the authors. The magazine is a platform for people, both amateur and professional, to express their views and observations about invertebrates. These are not necessarily those of the BOIC. The manuscripts are submitted for comment to entomologists or people working in the area of the topic being discussed. If inaccuracies have inadvertently occurred and are brought to our attention we will seek to correct them in future editions. The Editor reserves the right to refuse to print any matter which is unsuitable, inappropriate or objectionable and to make nomenclature changes as appropriate.

ACKNOWLEDGMENTS

Producing this magazine is done with the efforts of:

- Those members who have sent in letters and articles
- Lois Hughes who provided the cover painting
- Daphne Bowden who works on layout, production and distribution
- John Moss, Adam Slipinski and Frank Jordan for scientific referencing and proof reading of various articles in this issue of the magazine

ARE YOU A MEMBER?

Please check your mailing label for the date your membership is due for renewal. If your membership is due, please renew as soon as possible. **Membership fees are \$30.00 for individuals, schools and organizations.** If you wish to pay electronically, the following information will assist you: BSB: **484-799**, Account No: **001227191**, Account name: **BOIC**, Bank: **Suncorp**, Reference: your membership number and surname e.g. **234 Roberts**.

Next event – **An excursion to Pooh Corner, Wacol, Saturday 16th July 2016 from 10 am**

